FIGURE 1A
(PRIOR ART)

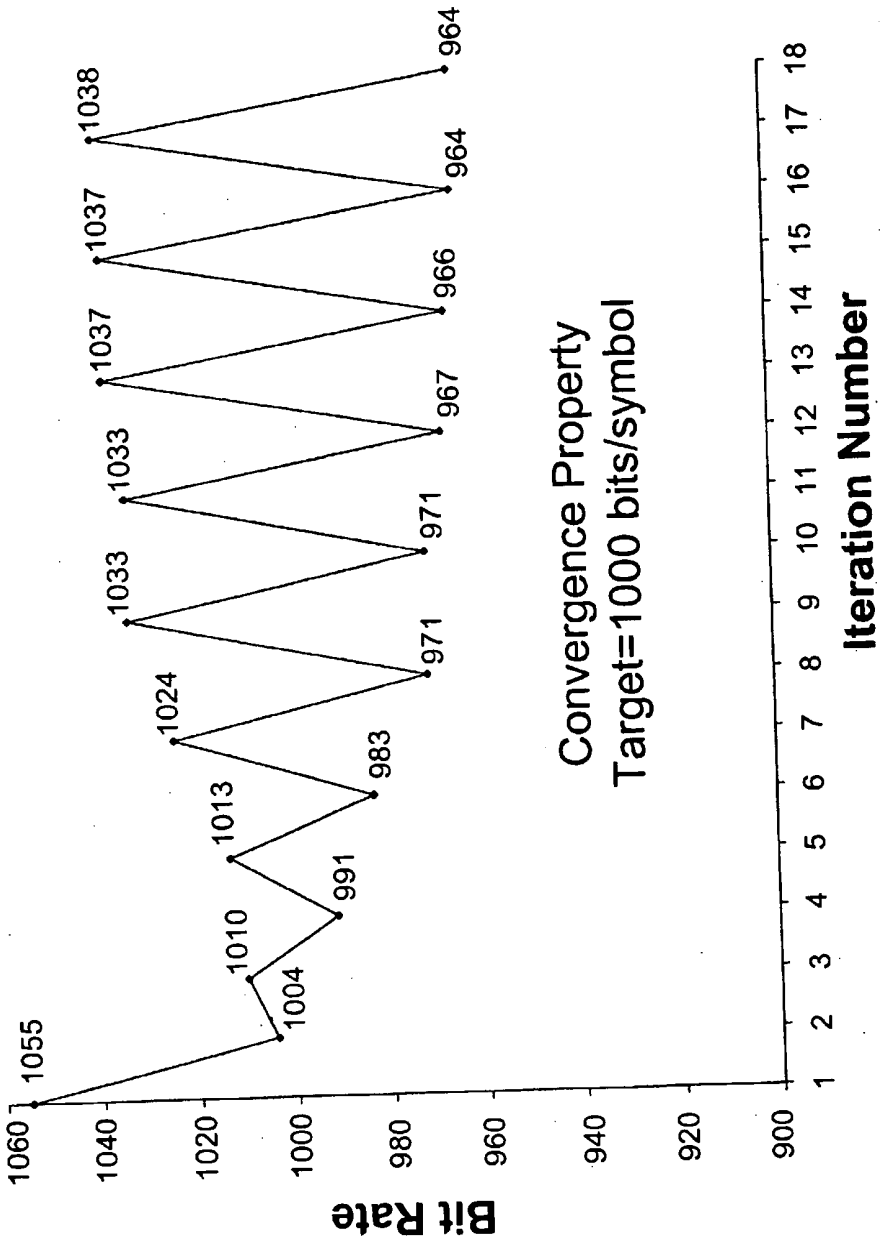
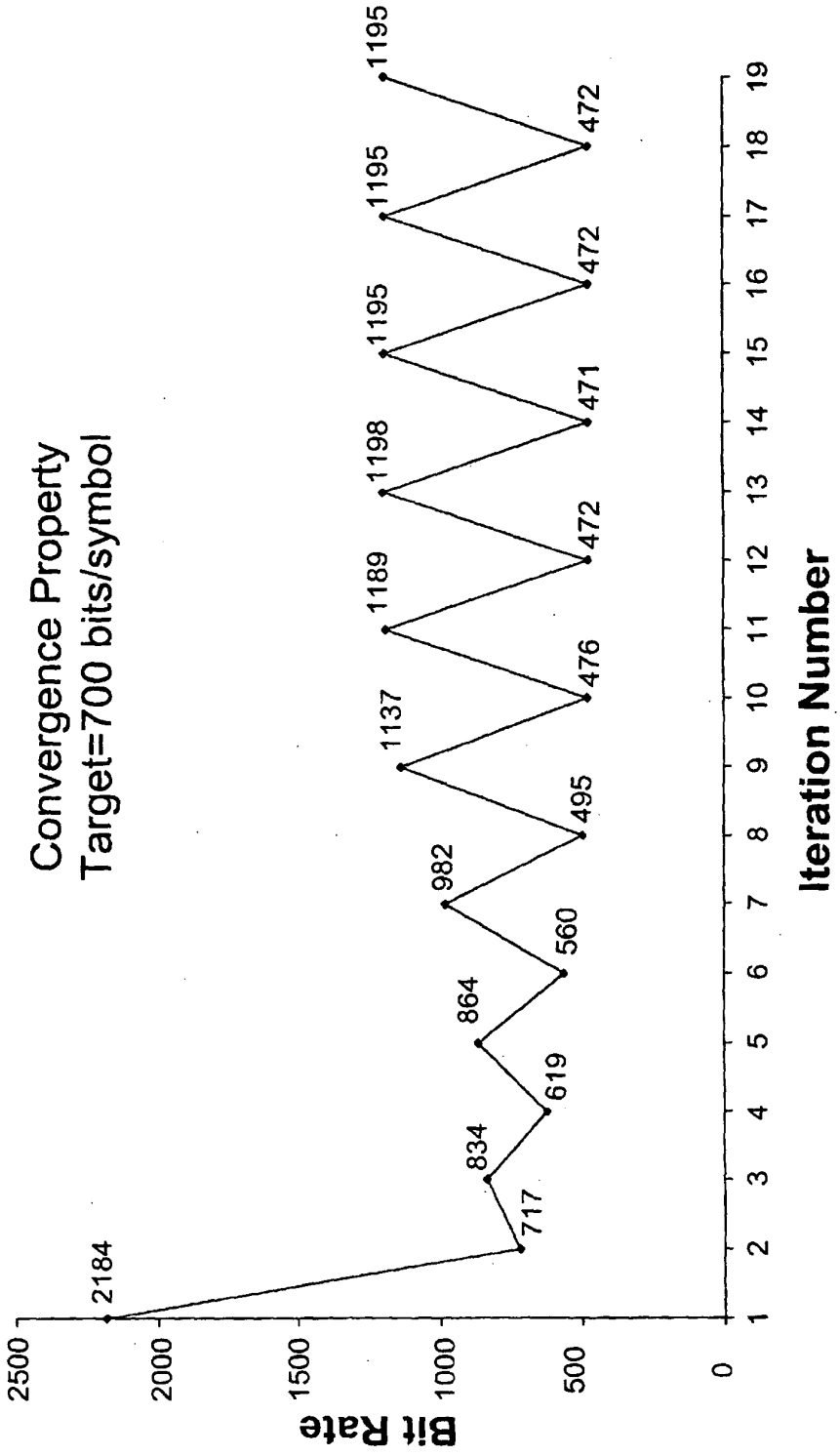


FIGURE 1B
(PRIOR ART)



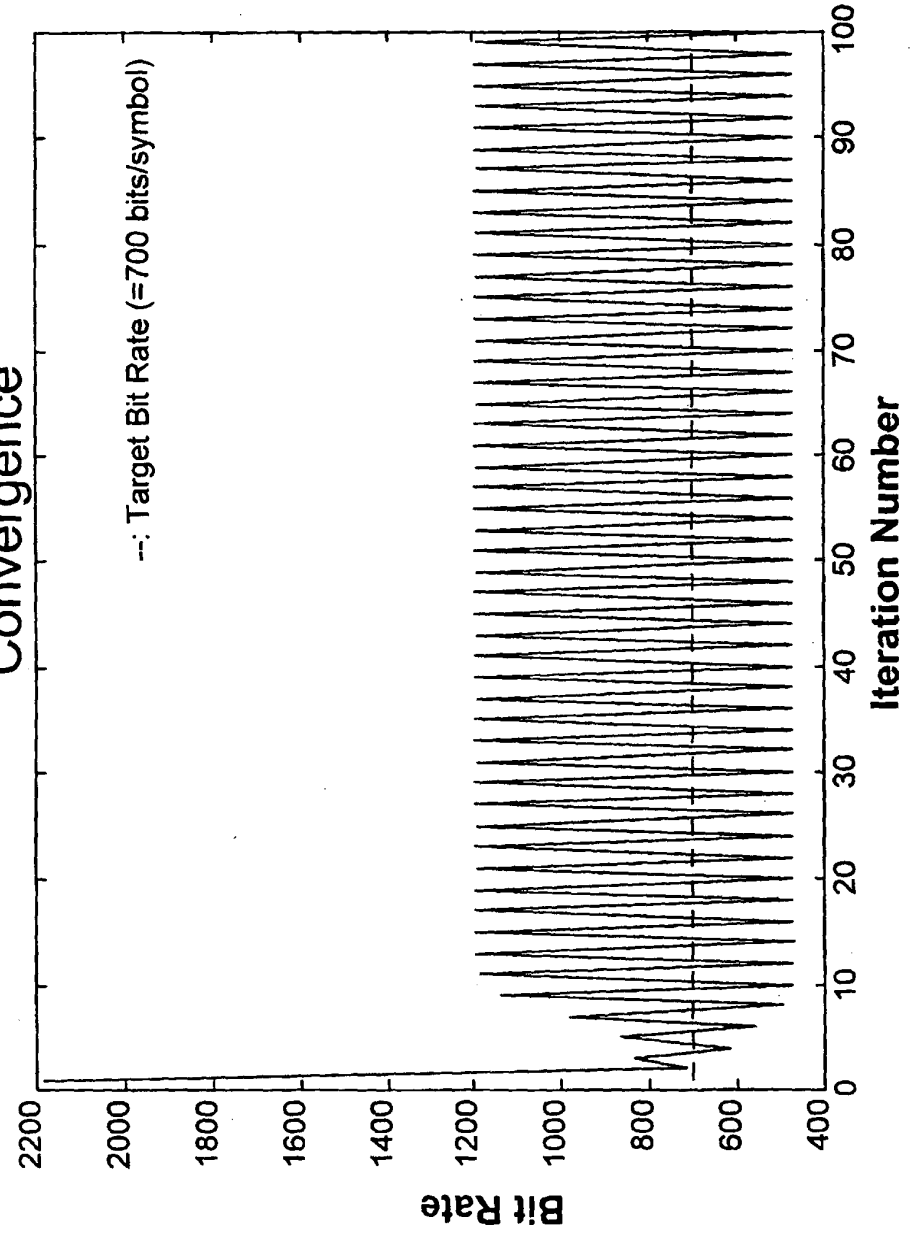



FIGURE 1C
(PRIOR ART)

FIGURE 2
(Prior Art)

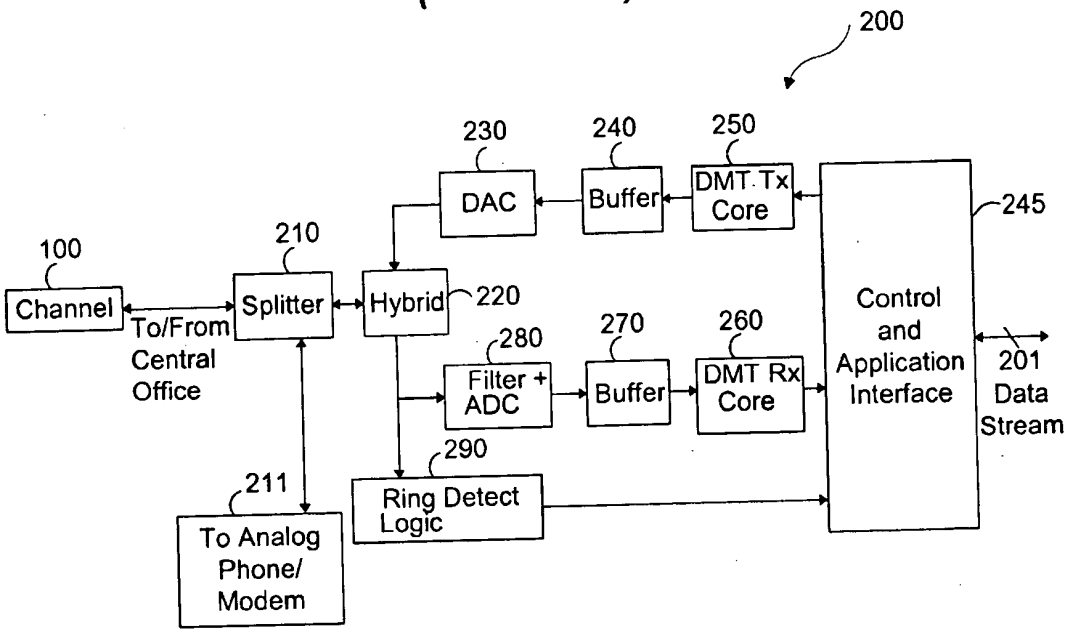



FIGURE 3

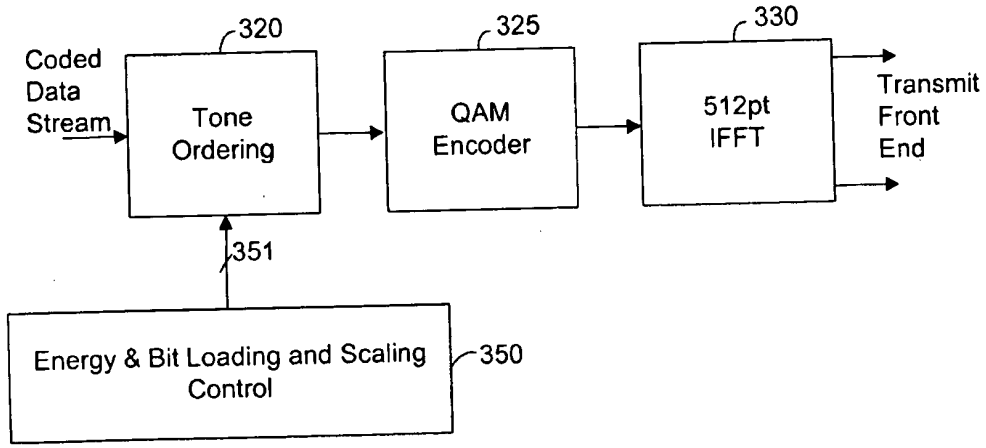


FIGURE 4

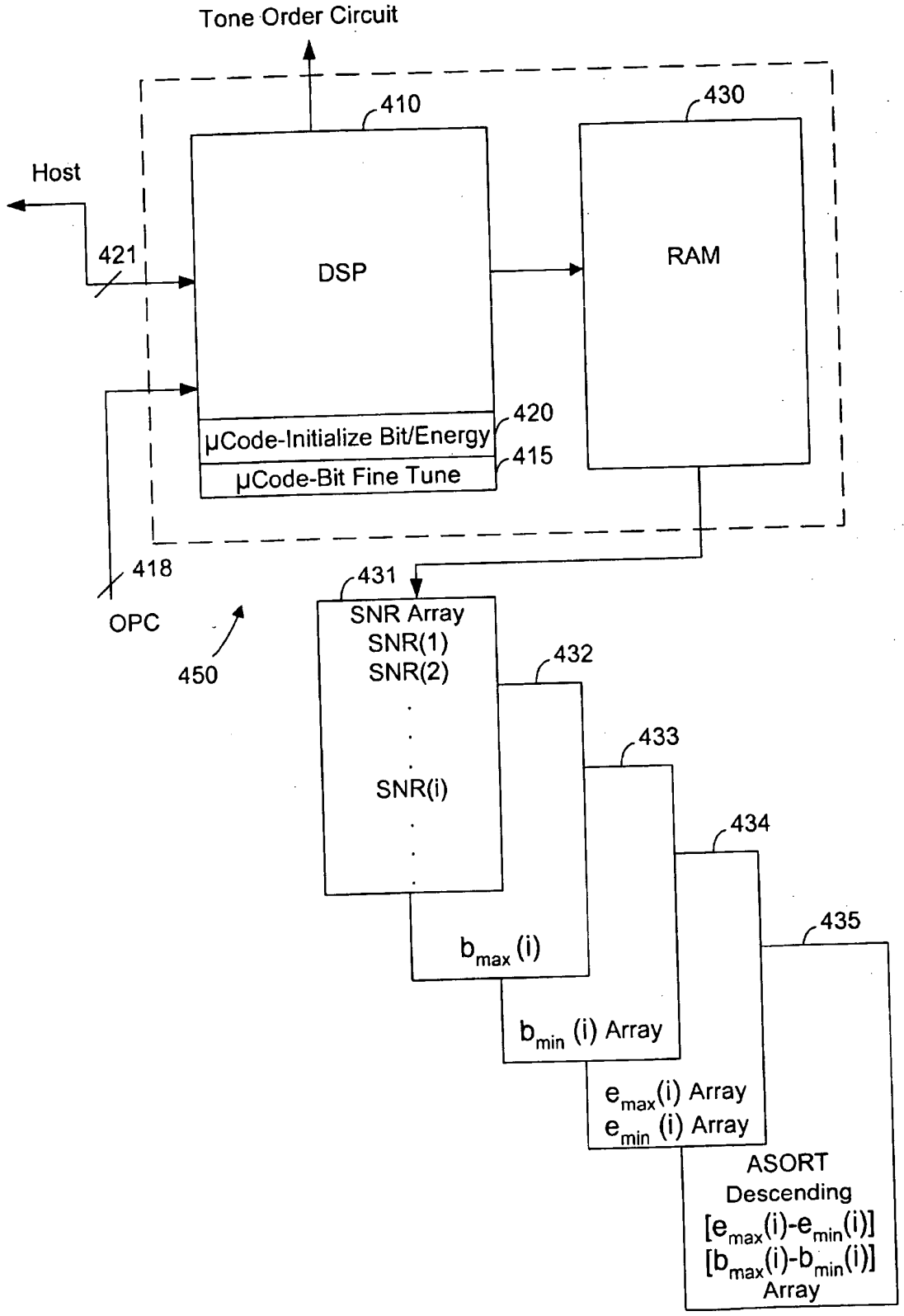

Tone Order Circuit
410
430
Host
421
DSP
RAM
µCode-Initialize Bit/Energy
420
µCode-Bit Fine Tune
415
418
OPC
450
431
SNR Array
SNR(1)
SNR(2)
SNR(i)
432
433
434
435
$b_{max}$ (i)
$b_{min}$ (i) Array
$e_{max}$(i) Array
$e_{min}$ (i) Array
ASORT
Descending
$[e_{max}(i)-e_{min}(i)]$
$[b_{max}(i)-b_{min}(i)]$
Array

FIGURE 5

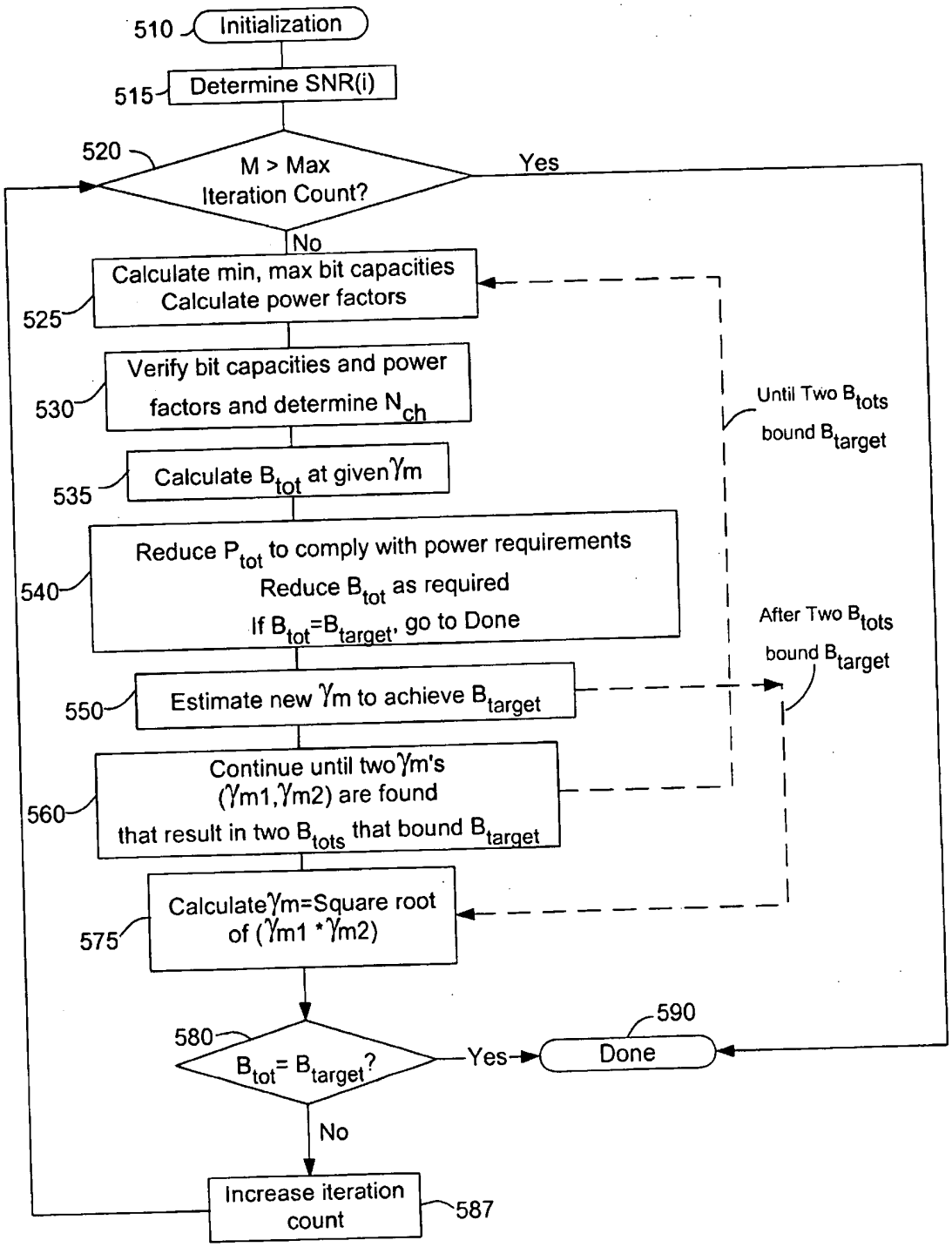
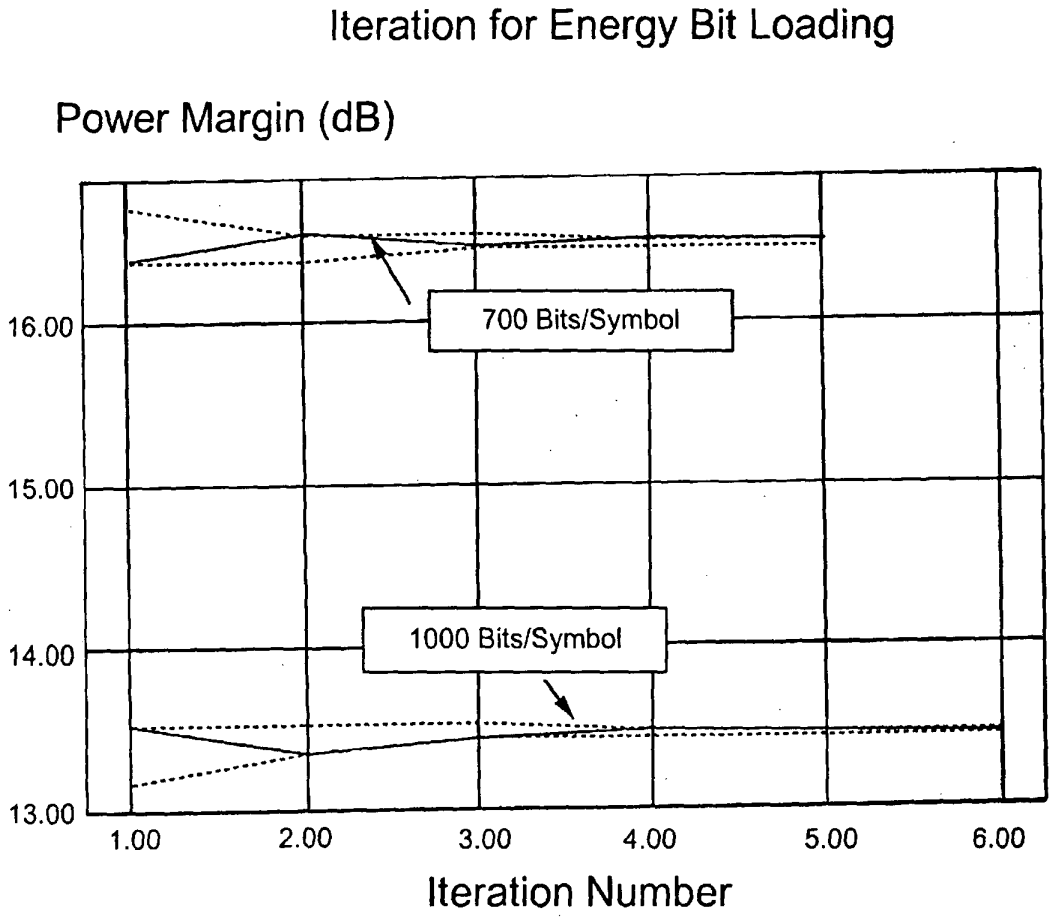
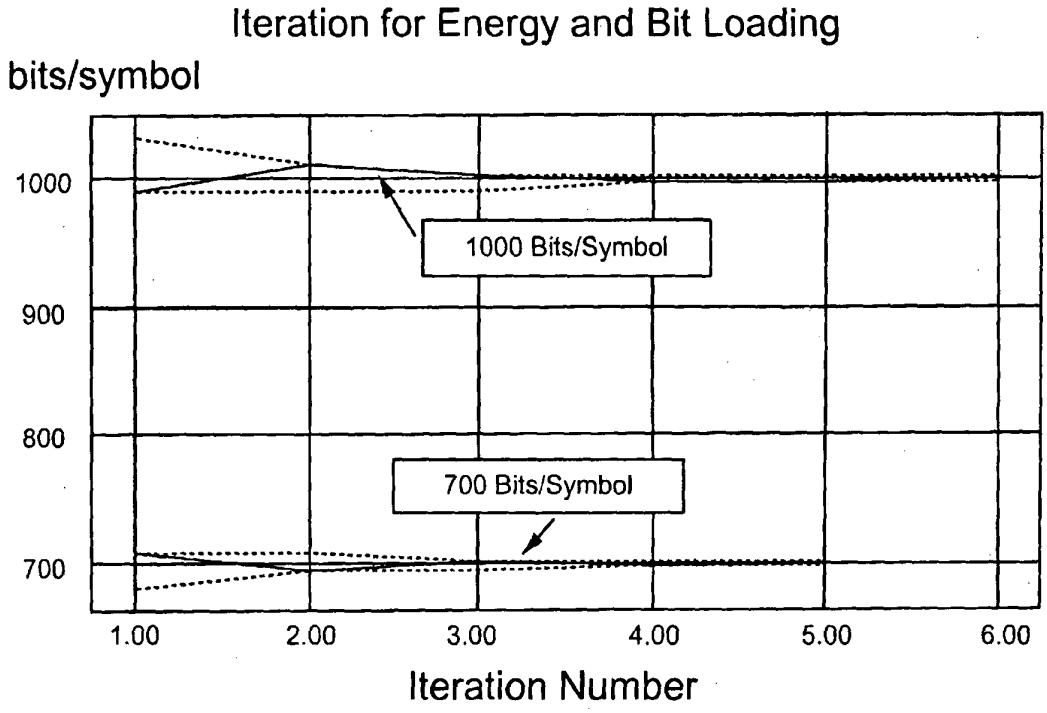

510
Initialization
515
Determine SNR(i)
520
M > Max Iteration Count?
Yes
No
525
Calculate min, max bit capacities
Calculate power factors
530
Verify bit capacities and power factors and determine $N_{ch}$
535
Calculate $B_{tot}$ at given $\gamma m$
540
Reduce $P_{tot}$ to comply with power requirements
Reduce $B_{tot}$ as required
If $B_{tot}=B_{target}$, go to Done
550
Estimate new $\gamma m$ to achieve $B_{target}$
560
Continue until two $\gamma m$'s ($\gamma m1$, $\gamma m2$) are found that result in two $B_{tots}$ that bound $B_{target}$
575
Calculate $\gamma m$=Square root of ($\gamma m1 * \gamma m2$)
580
$B_{tot}= B_{target}$?
Yes
590
Done
No
Increase iteration count
587
Until Two $B_{tots}$ bound $B_{target}$
After Two $B_{tots}$ bound $B_{target}$

*FIGURE 6A*




Solid Lines: power margin during iteration
Dotted Lines: interval limits during binary iteration

*FIGURE 6B*




Solid Lines: power margin during iteration
Dotted Lines: interval limits during binary iteration

FIGURE 7

Bit Fine Tune Procedure

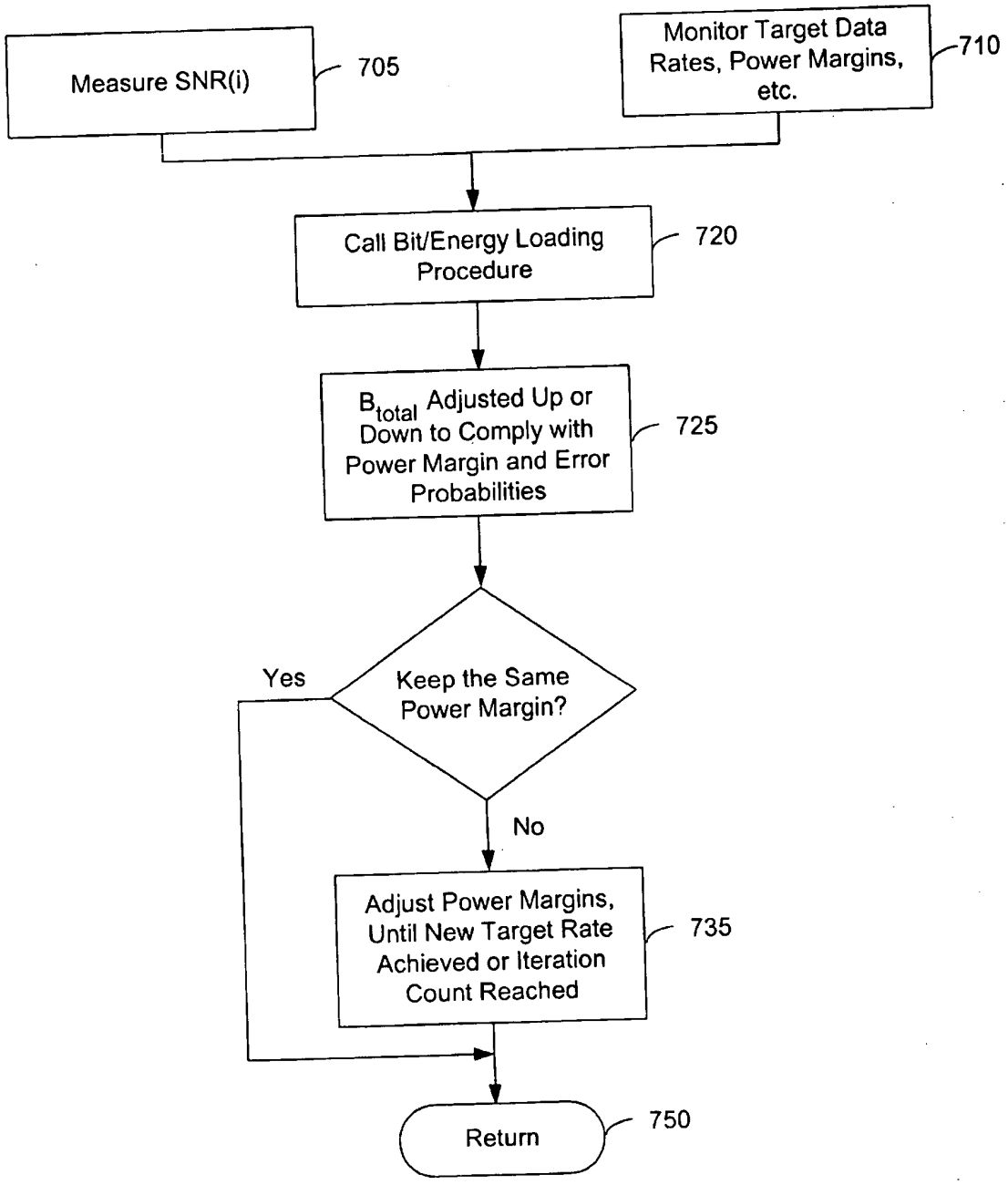
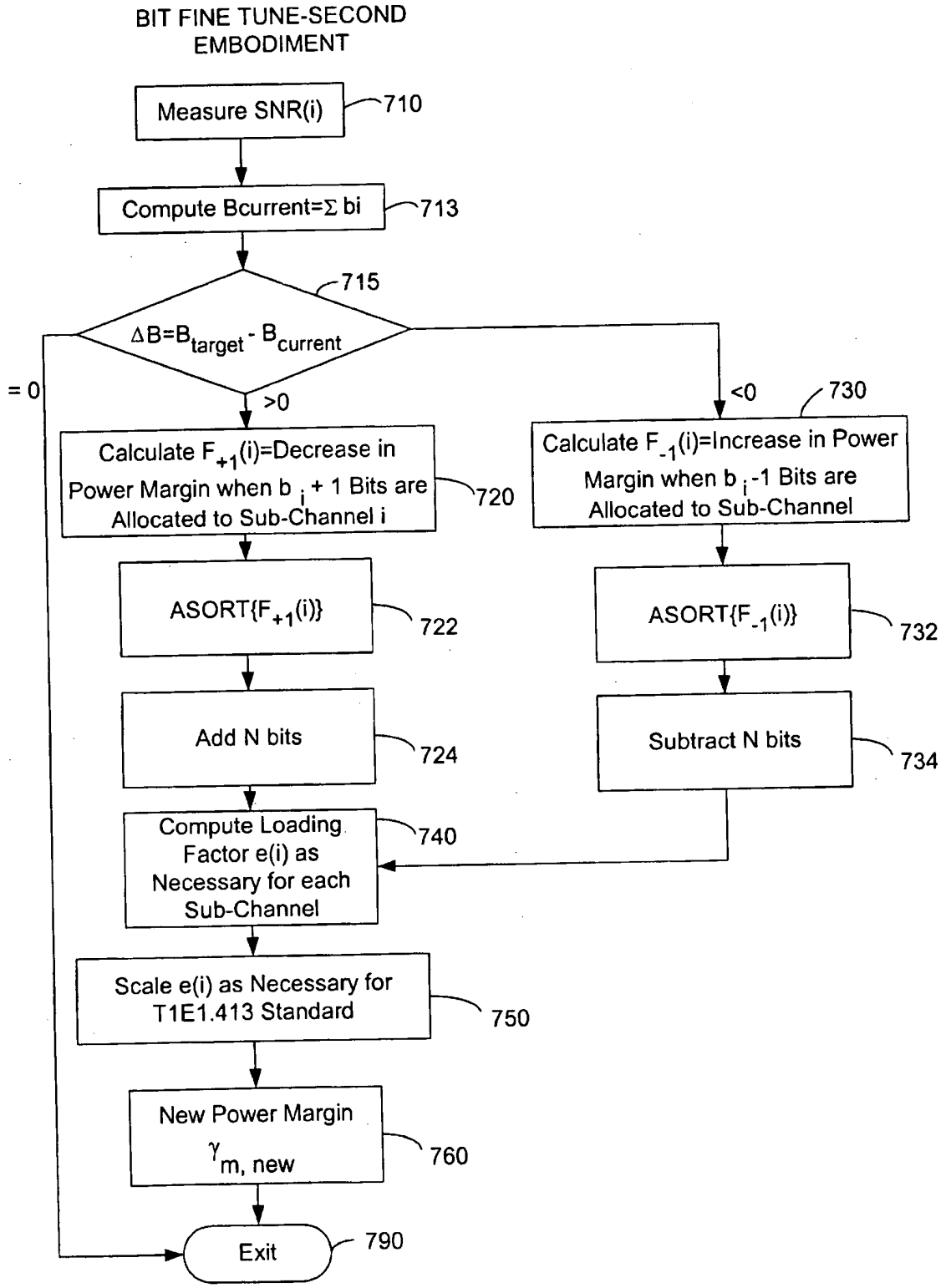


FIGURE 8


BIT FINE TUNE-SECOND EMBODIMENT
Measure SNR(i)
710
Compute Bcurrent=Σ bi
713
715
ΔB=B target - B current
= 0
>0
<0
730
Calculate F +1(i)=Decrease in Power Margin when b i + 1 Bits are Allocated to Sub-Channel i
720
Calculate F -1(i)=Increase in Power Margin when b i -1 Bits are Allocated to Sub-Channel
ASORT{F +1(i)}
722
ASORT{F -1(i)}
732
Add N bits
724
Subtract N bits
734
Compute Loading Factor e(i) as Necessary for each Sub-Channel
740
Scale e(i) as Necessary for T1E1.413 Standard
750
New Power Margin γ m, new
760
Exit
790